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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/706,805	BOZAK ET AL.
		Examiner	Art Unit
		ABDULLAH AL KAWSAR	2195

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>10/23/1007, 02/22/2008</u>.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-20</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>11/12/1003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-20 are pending.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

3.   Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

      a.   The following claim languages are not clearly understood and indefinite:

            i.   Claim 1, line 1 recites "responding to a request" it is unclear who send the

request and who receives the request. Line 3 recites "sending a list" it is unclear

what does the list include (i.e. available resources? all the resources?). Line 4

recites "receiving a selection" it is unclear what is defined by selection and from

where it is being received.

            ii.   Claims 7 and 15 has similar deficiency as claim 1 above.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person

> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1, 3-7, 9-12, 15 and 17-20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over "A Distributed Resource Management Architecture that Supports Advance

Reservations and Co-allocation" by Ian Foster(Foster), in view of " Nimrod/G: An Architecture

for a Resource Management and Scheduling System in a Global Computational Grid" by

Rajkumar Buyya(Buyya).

6.   Buyya was cited in the last office action.

7.   As per claim 1, Foster teaches the invention substantially as claimed including a method

comprising:

        in a network, responding to a request for a computational resource to begin computing a

task by sending a list of computational resources (page 29, Left column, 3.1 The Globus

Resource Management Architecture, lines 24-32, "An application that wishes to create........

multiple resources in the presence of failure; page 30, Left column, lines 20-24, "a co-reservation

requirement........QOS requirements");

        receiving a selection of a computational resource for reservation (page 29, Right column,

3.2 The Globus Architecture for Reservation and Allocation, lines 22-28, In the reservation

phase,................. object with the reservation."; page 30, Left column, lines 25-27, "Hence, a

call to a co-reservation...... to an co-allocation agent.");and

if the selection of the computational resource is available for computing the task,
reserving the selection (page 30, Left column, lines 20-25, "A co-reservation...... reserves
them."); and

sending the request to a different portion of the network if computational resources are
unavailable to begin computing the task (page 30, Left column, lines 6-8, "If the resource
cannot...... operation fails."; lines 32-34, "interact with an....... failure that may occur."; Right
column, 4. Co-Reservation/Allocation Agents, lines 20-22, "Finally, an agent.... allowing a user
or ap-" through page 31, Left column, line 1, "placation to guide the construction of a resource
set."; page 32, Left column, lines 6-10, "The routine....name for these resources").

Foster does not specifically disclose sending a reservation number for the selection.

However, Buyya teaches sending a reservation number for the selection (page 3, Right
column, 3. Scheduling and computational Economy, lines 15-17, "The system can employ..........
identify suitable resources.").

8.   It would have been obvious to a person of ordinary skill in art at the time of invention
was made to incorporate the teaching of Buyya into the method of Foster to have a reservation
number for the selected resources. The modification would have been obvious because one of the
ordinary skills of the art would identify the selected reserved resources for better resource
allocation and management over the network.

9.   As per claim 3, Buyya teaches reserving the selection further comprises assigning the

reservation number (page 3, Right column, 3. Scheduling and computational Economy, lines 15-

17, "The system can employ.......... identify suitable resources.").

10.   As per claim 4, Foster teaches waiting a predetermined time period for the computational

resource to begin computing the task (page 30, Left column, lines 2-6, "A reservation........

available for the desired time."); and

        if the predetermined time period is expired and the computational resource has not begun

computing the task, then freeing the computational resource for subsequent reservation for

computing a second task (page 31, Right column, 5. GARA Application Programming Interface,

lines 21-26, "ModifyReservation allows..... reservation expires."; Figure 4).

11.   As per claim 5, Foster teaches responding to the request further comprises comparing

requirements for computing the task with specifications of the available computational resources

(page 30, Right column, 4. Co-Reservation/Allocation Agents, lines 1-6, "Co-reservation(and, to

a lesser .... resource providers.").

12.   As per claim 6, Foster teaches generating a list of computational resources by querying a

portion of the network (page 29, Left column, 3.1 The Globus Resource Management

Architecture, lines 20-23, "Automated discovery and........ desired characteristics.")

13.   As per claim 7, Foster teaches the invention substantially as claimed including a method

comprising:

      in a network, sending, by a first service, a request for a list of one or more computational

resources that are available to begin computing a task (page 31, Left column, lines 12-16, "we

imagine a co-reservation...... the user is prepared to pay.");

      responding, by a second service, to the request by collecting information on

computational resources (page 31, Left column, lines 16-22, "The agent uses the information.....

for analysis and data transfer.");

      sending a list of available computational resources (page 29, Left column, 3.1 The

Globus Resource Management Architecture, lines 24-32, "An application that wishes to

create........ multiple resources in the presence of failure; page 30, Left column, lines 20-24, "a

co-reservation requirement........QOS requirements");

      receiving a selected computational resource for reservation (page 29, Right column, 3.2

The Globus Architecture for Reservation and Allocation, lines 22-28, In the reservation

phase,.................. object with the reservation."; page 30, Left column, lines 25-27, "Hence, a

call to a co-reservation...... to an co-allocation agent.");

      reserving the selected computational resource if the selected computational resource is

available to begin computing the task(page 30, Left column, lines 20-25, "A co-reservation......

reserves them."); and

      sending the request to begin computing the task, to a third service if the second service

has no information on available computational resources (page 30, Left column, lines 6-8, "If the

resource cannot...... operation fails."; lines 32-34, "interact with an....... failure that may

occur."; Right column, 4.Co-Reservation/Allocation Agents, lines 20-22, "Finally, an agent....

allowing a user or ap-" through page 31, Left column, line 1, "placation to guide the construction

of a resource set."; page 32, Left column, lines 6-10, "The routine....name for these resources").

     Foster does not specifically disclose sending reservation number of the selected

computational resource.

     However, Buyya teaches and sending reservation number of the selected computational

resource (page 3, Right column, 3.Scheduling and computational Economy, lines 15-17, "The

system can employ.......... identify suitable resources.").

14.   As per claims 9 – 11, they have the similar limitations as of claims 3 - 5 above.

Therefore, they are therefore rejected under the same rational of claims 3 - 5 above.

15.   As per claim 12, Buyya teaches wherein the second service has a stored relation to the

first service (page 2, Right column, 2. System Architecture, lines 17-21, "Another feature of the

Nimrod/G ....the same or different user").

16.   As per claim 15, Foster teaches the invention substantially as claimed including a

network comprising:

     a first computer system having a first set of one or more computational resources and

configured to execute instructions of a first service (page 29, Left column, 3.1 The Globus

Resource Management Architecture, lines 24-32, "An application that wishes to create........

multiple resources in the presence of failure"); and

a second computer system configured to execute instructions of a second service, the first service configured to (page 31, Left column, lines 16-22, "The agent uses the information….. for analysis and data transfer."):

respond to a request for a list of computational resources to begin computing a task by collecting information on at least the first set of one or more computational resources (page 31, Left column, lines 23-27, "The agent must now……. using exhaustive search");

send a list comprising a subset of the first set of the one or more computational resources (page 30, Left column, lines 20-27, "A co-reservation agent ……….. to an co-allocation agent");

receive a selection of a computational resource for reservation (page 29, Right column, 3.2 The Globus Architecture for Reservation and Allocation, lines 22-28, In the reservation phase,……………… object with the reservation."; page 30, Left column, lines 25-27, "Hence, a call to a co-reservation…… to an co-allocation agent.");

reserve the selection if the selection of the computational resource is available to begin computing the task (page 30, Left column, lines 20-25, "A co-reservation…… reserves them."); and

send the request to the second service if computational resources are unavailable to begin computing the task (page 30, Left column, lines 6-8, "If the resource cannot…… operation fails."; lines 32-34, "interact with an……. failure that may occur."; Right column, 4.Co-Reservation/Allocation Agents, lines 20-22, "Finally, an agent…. allowing a user or ap-" through page 31, Left column, line 1, "placation to guide the construction of a resource set."; page 32, Left column, lines 6-10, "The routine….name for these resources").

Foster does not specifically disclose send an address of the selection.

However, Buyya teaches send an address of the selection (page 3, Right column, 3.Scheduling and computational Economy, lines 15-17, "The system can employ.......... identify suitable resources.").

17.   As per claims 17 – 19, they have similar limitations as of claims 3 - 5 above. Therefore, they are therefore rejected under the same rational as of claims 3-5 above.

18.   As per claim 20, it has similar limitations as of claim 12 above. Therefore it is rejected under the same rational as of claim 12 above.

19.   Claims 2, 8, 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A Distributed Resource Management Architecture that Supports Advance Reservations and Co-allocation" by Ian Foster(Foster), in view of " Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid" by Rajkumar Buyya(Buyya) as applied to claims 1, 7 and 15 above, and further in view of "Design and Evaluation of a Resource Selection Framework for Grid Applications" by Chuang Liu(Liu).

20.   Liu was cited in the last office action.

21.   As per claim 2, Foster and Buyya do not specifically disclose wherein the list of computational resources comprises network addresses of the computational resources.

However, Liu teaches wherein the list of computational resources comprises network addresses of the computational resources (page 5, Left column, 3.3 Resource Selection Result, lines 1-12, " the result returned...... </virtual machine>").

22.   It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Liu into the combined method of Foster and Buyya to have network address for the list of computational resources. The modification would have been obvious because one of the ordinary skills of the art would use the network address of the computer that has the resources to be able to identify the host and resource provider.

23.   As per claim 8, it has similar limitations as of claim 2 above. Therefore it is rejected under the same rational as of claim 2 above.

24.   As per claim 13, Liu teaches wherein the first service executes instructions on a first computer system and the computational resources managed by the first service comprise a first set of computational resources located on the first computer system (page 2, Left column, lines 26-36, "Within this framework .... resources, if any are available.").

25.   As per claim 14, Liu teaches wherein the third service has a stored relation with the first service, the third service executes instructions on a second computer system, and the computational resources that are described by information accessible to the first service further comprise a second set of computational resources that are described by information accessible to

the third service (page 8, Left column, 5.3 Resource Selection Algorithm Test, lines 1-9, To

validate the.... From different clusters."; Right column, lines 1-13, "In the single....... Machines

are relatively small.").

26.   As per claim 16, it has similar limitations as of claim 14 above. Therefore it is rejected

under the same rational as of claim 14 above.

Response to Amendment

27.   Applicant's arguments in respect to claims have been considered but are moot in view of

the new ground(s) of rejection.

Conclusion

28.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is

(571)270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

29.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

30.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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